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MONTHLY REVIEW

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Associate Editors.

Dr. Wm. Blum, Bureau of Standards, Washington D C.
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ST. LOUIS BRANCH NUMBER

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Friendship either finds us or leaves us equals; that is a certain common level is necessary between friends.

Time, which makes all things ugly, makes friendship beautiful, is the French setting. We say: There is no friend like an old friend.

That friends are better than gold is the burden of many proverbs. A treasure is not a friend, but a friend is a treasure.—From Dr. Crane.

MONTHLY REVIEW

Published by the

American Electro-Platers' Society

Editors' Office, 4156 Botanical Ave., St. Louis, Mo.

Vol. 8 APRIL No. 4

ELECTION OF DELEGATES

During the month of May the election of officers will take place in the various branches, and at the same time the delegates to the annual convention, to be held in Indianapolis, will be chosen.

In the past, some branches have been represented by only one delegate, although several other members of the same branch have been present.

We believe the best interests of our society can be served by a full representation, when possible, and it increases the resources of talent.

Each branch is entitled to three representatives, who must be active members. Any member who is an officer in the Supreme Society must be elected by his respective branch as one of the representatives.

We have been requested to announce the fact of our intention to decline the editorship next year, in order that branches may select among their delegates, members willing to serve in that capacity.

We have among our members many that can do the work with great credit to the American Electro-Platers' Society and to themselves; it is the duty of the branches to name them as delegates. EDITOR.

ST. LOUIS BRANCH NUMBER

We regret that it is impossible to get in this issue all the papers we have received. It will be necessary to hold over some of the best, yet, we ask the contributors to bear with us. We have others who are very considerate, having sent in articles some months ago, and have not complained. EDITOR.

Chicago, Cincinnati, Dayton, Detroit, Grand Rapids, Milwaukee, St. Louis and Toledo are less than 300 miles from Indianapolis. Cleveland is just a little over that distance. All of these branches should have large delegations. Come along, boys!

NICKEL PLATING STOVE TRIMMINGS

By G. Lamkemeyer, St. Louis Branch.

Our work consists of the plating of stove parts and cafeteria equipments, made from malleable and gray iron castings, steel and copper sheets, also coffee urns and reservoirs.

We have about 5,000 gallons nickel solution and all are worked warm from 90° to 100° Fahr

Recently I have made up three 300-gallon nickel solutions, two of single and one of double salts, with the following formulas and results.

No. 1. 1 lb. nickel sulphate.
4 oz. boric acid.
3 oz. sodium chloride.
1 gal. water.

With this solution I got a deposit which was bright but too hard for my class of work, using 2¼ volts.

No. 2. 1 lb. nickel sulphate.
4 oz. boric acid.
1/16 hydrochloric acid.
1 gal. water.

With this solution I got a bright and soft deposit for a few days; then I had peeling, pitting and colors of the rainbow, using 2½ volts. I added 50 lbs. nickel ammonium sulphate, and now get a white and soft deposit, and no trouble.

No. 3. 8 oz. nickel ammonium sulphate.
4 oz. nickel sulphate.
1 oz. boric acid.
1/16 oz. sulphuric acid.
1 gal. water.

Using 2½ volts, this deposit is white and soft, and will stand bending.

Some time ago I made up a 600 gallon solution as follows:

No. 4. 8 oz. nickel ammonium sulphate.
4 oz. nickel sulphate.
2 oz. boric acid.
2 oz. sodium chloride.
1 gal. water.

Using 2 to 2½ volts, I worked this solution for a year without the addition of metal or chemicals and got a white and soft deposit. This solution had a resistance of 32½ ohms at 70° Fahr. and 24 ohms at 100° Fahr.

The rest of the solutions are made according to formula No. 3, except without the boric acid. I add nickel ammonium sulphate, nickel sulphate and sulphuric acid as needed and always have a white and malleable nickel deposit.

In my experiments I found all bright deposits very brittle, and that brightening agents were troublemakers.

CLEANING AND PICKLING OF METALS

By E. W. Heil, G. S. Robins, H. H. Williams,

St. Louis Branch.

Work coming to the plating room to be cleaned and prepared for the purpose of plating is received from different sources and in different conditions.

The substance to be removed consists of oils, greases, polishing compounds, and sometimes rust, scale, sand and also oxidations of various kinds.

It is well to note the fact that much of the expense and trouble of cleaning can be eliminated in many shops by the selecting of proper cutting, drawing and anti-rust compounds. For some years past, in connection with the cleaning, mechanical devices of various kinds have been used to quicken and improve the work; some cleaning solutions are agitated by pump, some by air, some the work bar is on an eccentric, and then some have electrical connections. The value of the different alkalies and methods are somewhat decided by the class and condition of the work handled.

Cleaners may be divided into three general classes: No. 1, Saponifiers; No. 2, Scrubbers; No. 3, Solvents.

Under No. 1 we have alkalies principally caustic soda, soda ash, caustic potash, sal soda (which is simply a modified soda ash). All of these work on the fatty grease only—that is, the saponifiable grease. Caustic soda is NaOH (Na_2O plus H_2O); soda ash is Na_2CO_3 (Na_2O plus CO); caustic potash is KOH K_2O plus H_2O). In each instance you note there is the same combination present that is Na_2O (in the case of caustic potash it is K_2O). This is the active part—the part that grabs the fat to form a soap of it, and the soap is easily removed by water. Caustic potash (now still too expensive to use) works a little faster, because it forms soft soaps which wash off more readily than hard soaps. Caustic soda and soda ash form hard soaps. However, the difference is not commensurate with the difference in cost.

If your work was greasy only from animal or vegetable grease, all you would have to do would be to hang it in caustic or soda ash solution for a few minutes and all would be cleaned quickly. But mineral oil and grease, which is the principal scum on the work, is not saponifiable and hence the necessity for the second class of cleaners, i. e., the scrubbers, so called because their action is mechanical and not chemical.

First and foremost and most effective of the scrubbers is the man with scrubbing brush and strength of arm. He can mechanically brush off the oily grease.

Second is the chemical method. To remove a scum of mineral oil is a real job. It can't be saponified and it can't be washed with water. You must form an elastic film around the particles of oil which will spread them apart from each other

and separate them from the metal surface. Colloids will form such films desired. Then we must introduce colloids.

The most common colloidal substance is soap. When soap, which is principally sodium stearate, is acted on by water it splits up or hydrolizes into caustic soda and sodium acid stearate. Sodium acid stearate is what you see as lather. The lather forms the necessary film around the oil and the oil can thus be removed. The caustic soda will help saponify any animal or vegetable grease present.

More efficient colloids, however, are obtained from tri-sodium phosphate and sodium aluminate. Tri-sodium phosphate (Na_3PO_4) splits in water to form NaOH and H_3PO_4 (P_2O_5 plus H_2O). Sodium aluminate (Na_3ALO_3) forms NaOH plus H_3ALO_3 (Al_2O_3 plus H_2O). In each case the colloid formed by either the phosphate or aluminate group produces the elastic film around the particles of oil.

Because of the fact that animal and vegetable greases are used as binders in nearly all abrasives and drawing compounds, there is nearly always some saponifiable grease along with the mineral on the work. Hence any one of the colloidal substances should be accompanied by an alkali so as to quickly remove both forms of grease.

The third method of scrubbing is by means of gas produced on the work by the electric current running through a solution of caustic soda. No matter what cleaner you use in your "electric clean," your gas is produced by the decomposition of caustic soda NaOH. The sodium being positive goes to the cathode (the work). Here it unites almost explosively with the water, thusly Na plus H_2O—NaOH plus H and the H or hydrogen being a gas, goes bubbling up through the solution, right along the side of the work and brushes off all the grease that can be brushed. If there is any grease of a saponifiable nature present, the caustic soda, which is formed again, will make a soap of it right then and there.

Put a colloidal substance such as mentioned before in your "electric clean" and you thus make it that much easier for the hydrogen bubbles to scrub the work, because the colloid will form a film around the oil and render it much more easily removable.

There are very few shops which have exactly the same cleaning problem. There is not a cleaner on the market which will clean efficiently—that is, thoroughly clean in the quickest time and at the lowest cost—for every one, because the amount to be cleaned in nearly every shop is different. Consequently, it is a matter of study for each plating foreman to determine the amount of alkali and the amount of colloid which gives him the best results. He should also determine whether or not he can more economically use the "electric clean" and if so, whether or not he should introduce colloids into the bath. To get a line on the proper formula, it is not necessary to make up several

tanks of solution. First determine what kind of grease you are dealing with and then experiment along the lines outlined to deal with that grease. These experiments can easily be worked in one-gallon or five gallon jars.

The third and last class of cleaners are the solvents. In these the grease dissolves just as sugar dissolves in water. Both the animal and mineral greases are soluble in such solvents as gasoline, benzol, naphtha, carbon tetrachloride, chloroform and acetone. The solvents, however, are either too inflammable or too expensive for extensive commercial use.

In the process of manufacturing gasoline lamps and lanterns, the different kinds of metal which go through the cleaning processes, either for plating or cleaning between operations, are brass, cold rolled steel, lead coated armco iron and cast iron.

The materials used in cleaning are caustic soda, soda ash, tri-sodium phosphate, sodium silicate, fish soap and rosin. Perhaps this sounds like a very complicated combination of chemicals, but it is not so formidable as it looks. It is simply caustic, alkali and soap.

Much of the lamp work is buffed brass and soft soldered and therefore not so very much caustic can be used as it will spread the soft solder and destroy the lustre of the surface. The lamp fount comes in this class and is a large part of our work.

We clean on an average of from 2,000 to 2,100 in nine hours. The cleaning is done in two kettles, seven feet long by 12 inches wide and 12 inches deep. The formula is:

Cuastic Soda	½ ounces
Tri-Sodium Phosphate	2 ounces
Soda Ash	4 ounces
Sodium Silicate	2 fluid ounces and
Water	1 gallon

In such a cleaner we keep the caustic content below 15% of the soda ash used and so a 15% causticised ash could be used. In the fount cleaning operation, the cleaner is pumped on the work; therefore sodium silicate is used for the soap because it does not foam as much as suds, which is an objectionable feature.

After cleaning, the work is dipped in hot water; then in a 15% muriatic acid, rinsed and plated. The hot water rinse is used to keep up the cleaner and clean water added to the rinse from time to time. The cleaning operation requires from two to three minutes.

In the still cleaning solutions, we use fish soap instead of sodium silicate and put in the same amount as we do caustic soda. Much of the small brass work cleaned this way and handled in baskets is rinsed and dipped in a cyanide dip with proportions of one-half pound of sodium cyanide to one gallon of water. After being dipped, the work is rinsed and plated. If the work is steel or unbuffed brass, which we just give a white coat of nickel, we dip it in a 25% muriatic acid dip and then rinse and plate.

The lead coated iron parts are cleaned in an electric cleaner. A copper clean and flash would be the most satisfactory. If a regular electric cleaner is used, it should be a mild one, not containing much caustic, because it will turn the lead black.

Cast iron and steel that is to be plated after coming from cleaning tank should be rinsed in warm water, then dipped in an acid solution, made up of either sulphuric or muriatic acid, one part acid to ten parts water. This dip neutralizes the alkali and also removes slight rust spots and oxidations. Rusty and sandy parts should be pickled in hydrofluoric acid of like proportions before being polished if such an operation is necessary. From the acid dip the work is passed into a final rinse tank which should be running water, or at least water that is kept fresh according to amount of work being handled. Here the work should be inspected and if necessary scrubbed with pumice stone or sponged; when this is done a final rinse completes the job. For the cleaning of other kinds of metals, other alkalis and acids are sometimes used.

The pickling of cast iron and steel for zinc plating is a very important step toward a good adhesive deposit, and on the success of this operation is where the question of production is often found.

Again much depends on class of material to be handled. For sheet steel parts a pickle of sulphuric and muriatic acids will work good, using about one and a half pounds of sulphuric and a half pound muriatic per gallon. Sodium acid sulphate also has its merits and is the base of several trade-mark pickling compounds offered to the plater. For cast iron the use of hydrofluoric acid to remove the sand is the best and can be used as above stated, one part hydrofluoric to ten parts of water.

Many other conditions are met in some lines that require other acids or combinations, but in this paper we present the methods used on steel and cast iron.

ACID ZINC SOLUTION

By T. F. Carson, St. Louis Branch.

The zinc sulphate solution that I am using at present and which I find very satisfactory, for it gives a nice white deposit and plates rapidly, is made up as follows:

Zinc sulphate	1½	lbs.
Magnesium chloride	3	oz.
Magnesium sulphate	2	oz.
Aluminum sulphate	½	oz.
Water	1	gal.

Then to each 100 gallons of solution I add one-half pint sulphuric acid and one-half pint molasses.

This will stand 15° to 20° Be.

Run at 4 to 5 volts.

OXIDIZING AND COLORING OF METALS

By J. H. Hartman, St. Louis Branch.

The methods used by different platers for oxidizing and coloring of metals are like the names of their samples, every one different from the other.

For convenience I have used some brass telephone bells that happened to be in our shop. I will mention the name of each finish, but I do not think it necessary to describe methods used on all of them. After I have finished my description I shall be glad to answer and discuss anything pertaining to any of the finishes.

No. 1—Polished Brass and Clear Lacquer.
No. 2—Polished Brass and Rich Gilt Lacquer.
No. 3—Ormulo Gold, Plain.

This finish is produced by a dip composed of half gallon nitric acid, half gallon sulphuric acid, and about one pound of zinc carbonate, used hot. I add the zinc carbonate slowly, stirring until completely dissolved. After work comes out of ormulo dip, I give it a quick bright dip, then dry and apply rich gilt lacquer.

No 4—Ormulo Gold and Fancy Gilt.

Finish work, same as No. 3, then burnish with burnishing tool in lathe, as desired and lacquer.

No. 5—Satin Brass. (Same as No. 3, except clear lacquer used.)

No. 6—Spun Brass. (Sometimes called circular Satin Finish.)

This finish is produced by work being spun in lathe with No. 120 emery applied to it with a wet brush.

No. 7—Brush or Dull Brass.

No. 8—Polished Oxidized Brass.

For my brass oxidizing I used a solution composed of one gallon water, six ounces cyanide, one ounce white powdered arsenic with brass anodes, three volts, time required fifteen seconds. It produecs a nice soft oxidize, either gray or blue, as desired.

No. 9—Sanded Oxidized Brass.
No. 10—Mottled Oxidized Brass.
No. 11—Government Bronze.

Brush work thoroughly, and dip in solution composed of one gallon regular oxidizing solution, one pint caustic soda, quarter pint ammonia. Use hot, rinse in cold water, dry and scratch brush to even finish. Sometimes where a dull, no gloss effect is desired, parafine may be applied instead of lacquer.

No. 12—Terra Cotta Copper. (By immersion.)

Dip work in hot solution composed of one gallon water, eight ounces double nickle salts, 4 ounces copper sulphate, for about one minute, and scratch brush to even finish.

No. 13—Light Blue. (By immersion.)

Buff work to high color, dip in solution of one gallon ammonia and eight ounces carbonate copper. Keep hot, rinse quickly in cold water, and dry quickly. No scratch brushing necessary.

No. 14—Dark Blue. (By immersion.) Same as No. 13.
No. 15—Blue Steel (Copper Oxidized).
No. 16—Oxidized Copper.
No. 17—Mottled Copper.
No. 18—Brush or Dull Copper.
No. 19—Spun Copper.
No. 20—Medium Statuary Bronze.

I use same solution as for regular oxidizing, only about half strength. If reddish copper cast is not desired this can be overcome by reoxidizing, or restaining in hot caustic soda solution. This gives you a more chocolate colored bronze.

No. 21—Dark Statuary Bronze. Same as No. 20.
No. 22—Polished Copper and Lacquered.
No. 23—Bower Barff (Imitation).
No. 24—Light Verde Antique.

We make our Verde Green Lacquer by mixing white lead with lacquer, and thinning down with thinner and adding Paris green to desired shade. This makes a very adherent finish and can be sprayed, brushed or stippled. After work is dry it is brushed smooth and lacquered. Parafine applied with tampico wheel to this finish makes a very desirable antique finish.

No. 25—Dark Verde Antique. Same as No. 24, except a dark oxidized beckground is put on work before verde green lacquer is applied.

No. 26—Spun Steel (Ship finish).
No. 27—Brush Bronze.
No. 28—Butler Silver.
No. 29—Sanded Silver.
No. 30—Oxidized Silver.
No. 31—Mottled Silver.
No. 32—Spun Silver.

First a "Booster's Committee" then, now a "Hilarity Committee." Well, we don't care what they are called; it all means doing something for a good attendance at Indianapolis.

Banquet season is over; now boost for convention.

There are always some special features that develop at the conventions, not on the program, that you wouldn't miss if you only knew it. Don't miss Indianapolis on June 29th and 30th. July 1st and 2nd.

COLORING OF METALS

By J. H. Jordan, St. Louis Branch.

The following are some of the very desirable and practical finishes exhibited at meeting of St. Louis Branch:

Olive Green for Brass and Bronze.

Water	1 gal.
Perchloride of Copper	8 oz.
Perchloride of Iron	8 oz.

This dip must be used hot.

Either brass or bronze, polished or brushed, will oxidize in this dip. I find the brushed surface will work out the oxidize more uniformly. After dipping, a slight smut will show, but by scratch brushing, the olive color is brought out Lacquer.

Green Bronze Dip for Brass, Bronze or Copper.

Hot Water	1 gal.
Sulphate of Copper	1½ oz.
Sulphate of Iron	¼ oz.
Sal Soda	½ oz.

This dip gives a beautiful changeable bronze green, light green on brass, medium shade on bronze and a very dark green on copper. For brass with the basket or vine and leaf pattern, the finish is very appropriate.

Spanish Brass.

This finish is becoming popular with lighting fixture houses. The process is as follows: First, all parts, castings or spinnings, polish and buff then scratch brush with wet pumice and sand. Dry out. Stipple with the following mixture, using flexible bristle brush:

Water	1 gal.
Copper Nitrate	4 ozs.
Ammonium Chloride	4 ozs.
Calcium Chloride	4 ozs.

Make a thin paste by adding carbonate of copper.

After parts have been stippled allow to dry four or five hours. Then wash in clean water, using a soft brush or cloth. This will leave the dark mottled effect. Now oxidize in following dip:

Water	1 gal.
Golden Sulphuret of Antimony	½ oz.
Aqua Ammonia	1 pint

This dip should be used hot. It will oxidize immediately; dry with clean hot water and sawdust. Scratch brush, using a fine crinkle brass brush, six inch diameter, four row. Spray or brush lacquer.

GOLD PLATING

By E. W. Mueller, St. Louis Branch.

I will briefly outline the various proceedings, intended as a guide to those who have had little or no experience in gold plating. The class of work I do is replating church service utensils which must have a yellow or Roman color, and which are guaranteed to stand up under constant wear from eight to 10 years. Also candlesticks, censers, tabernacle doors, sanctuary lamps, etc., are plated but a few minutes, and then lacquered.

Gold Solution.

Water (rain or distilled)	1 gal.
Cyanide	½ oz. (Troy)
Phosphate of Soda	5 oz.
Bisulphite of Soda	3 dwt.
Gold Fulminate	5 dwt.

In the gold solution, the use of too much cyanide is not advisable, as the deposit gives a reddish tone which does not occur where phosphate of soda is used as the principal conducting salt. And again, if too much cyanide is used, and the article is suspended in the bath without agitation for any length of time, the plate will come up under the scratch brush.

The gold solution is made up as follows: Take your 24 C. P. gold, roll as thin as possible, cut it up, put in a glass flask and pour in half ounce nitric, one ounce hydrochloric acid c. p. Transfer flask to a water bath, heat slowly, and when bath is heated, transfer under hood so that fumes can escape. When cut down, take the chloride (no need to evaporate to dryness), transfer to a wide mouth bottle or jar, dilute with about one quart water. Then precipitate it as fulminate of gold with just enough strong ammonia to an orange pulverant form. When it is all down, fill up the jar with water and again allow it to settle. Then pour off the water into another jar; save it as there are always some particles of gold in it; again fill up jar containing the gold with water, and allow it to settle. Repeat this several times, always saving the washings.

To make the solution, take the fulminate of gold and add it to three-fourths gallon of hot rain or distilled water. Then pour in while stirring, the previously dissolved solution of cyanide, half ounce, then add the phosphate of soda (five ounces) and the bisulphite of soda (three dwt.). Boil the bath to expel the ammonia (3 to 4 minutes), let cool and fill up with water, lost through evaporation. The bath is now ready for use. Use fine gold anodes. The rule that the anode surface should be as large as the cathode surface or nearly so, does not apply to gold plating. In fact, the object being plated may be, and often is, ten times or more as large as the anode. But this should not be the practice. Try and keep anode one-third in proportion to the cathode. Otherwise there will be more gold taken from the solution than can be dissolved by the anode, thus weakening the solution, so that in time there will be very little gold in it,

when it will give a poor color and very little deposit. After using a solution for some time, should the color become poor, it will be found that the solution contains too little gold or too much cyanide.

Gold should be added in either form of fulminate taken up with just enough cyanide in water (nothing else), or gold trisalyt, until up to standard. After the solution has been used for some time, it will become dirty and should be filtered, as a solution containing dirt will never give a rich yellow color.

It is best to use a platinum wire for connecting the gold anode, especially when a 24 K. solution and anode are used and fine coloring is desired. The platinum wire is not affected by the current, consequently will last indefinitely. From one to one and a half inches is all that is required. Just enough to attach one end to the anode, and the other to the anode wire, keeping the copper wire out of the solution.

Should the anode turn dark or scum over, there is not enough cyanide in the solution. Then add cyanide, but never more than a few pennyweights at a time.

The proper temperature for obtaining a fine yellow or Roman gold I find, is 120 to 130 deg. F.

The amount of current also has considerable effect upon the color of the deposit. A weak current producing the lighter shade, a medium current, the rich yellow color, while the stronger the current used, the redder will be the color.

The current should be from one to three and a half volts. The raising or lowering of the anode in the solution will also give you different shades and colors, light, yellow and red.

For Work Guaranteed as to Wear.

Before plating, the work is first tripoli buffed, care being taken that sharp corners are not cut through, and that all scratches and pits are removed. It is then cleaned in a mild cleaner, rinsed, cyanide dipped, rinsed, scratch brushed, rinsed and then brought into the gold bath. I give the work what may be termed a strike, for about a minute at three and a half volts, then reduce it to one volt. Let it plate for about fifteen minutes, remove from bath, rinse off in a jar of rain or distilled water kept beside the bath to collect any of the solution clinging to the work. (Use this rinse water to add to the bath, as it evaporates.) Scratch brush the work, rinse in clean water and again put in the gold bath at one volt, and let it plate from two and a half to three hours. At intervals of forty-five minutes, I remove it from the bath and scratch brush. After it has received the proper amount of plate determined by weight), it is then finally scratched brushed and burnished with bloodstone burnishers. As a lubricant to the burnishing tool, tea is used, about two tablespoons of ordinary He-No tea to a cup of boiling water. Let cool and it is ready for use. After burnishing, color buff with a cotton flannel buff and soft gold rouge.

(Concluded on Page 18)

THE SOLUBILITY OF COPPER ANODES

By H. J. Dumas, St. Louis Branch.

Having four different kinds of copper anodes in the plating tank at one time, it was noticed how freely some gave up the metal while others did not. We decided to ascertain which kind was most soluble. No analysis was made of purity or hardness; all were commercial anodes, with exception noted below.

A certain number of each kind were taken out of the tank after the day's work; they were rinsed in cold and hot water and left to dry until morning; they were then weighed and put back in the plating tank, and then weighed in like manner every two weeks as long as the test lasted.

The anodes were four extruded, weighing 66½ lbs., six elliptic, weighing 90½ pounds, four electrolytic, 10"x20" weighing 105½ lbs., and eight rolled and annealed, 2 inches by 20 inches, weighing 22½ lbs.

The position of the anodes in the tank were often changed.

The following is the result showing the per cent loss of metal between each test:

	Test No. 1	Test No. 2	Test No. 3	Test No. 4
Extruded	7.52%	7.38%	12.28%	5.50%
Elliptic	3.87%	6.61%	8.92%	16.53%
Electrolytic ...	13.27%	11.48%	28.95%	31.02%
Rolled	34.44%	44.07%	completely dissolved.	
Special Tests—	No. 1	No. 2		
Extruded	9.34%	7.27%		
Elliptic	8.52%	5.88%		
Electrolytic ...	22.81%	20.32%		

In test 3 and 4, notice the difference between the extruded and elyptic anodes; this was due to a strip of copper with a hole in it for the anode hook, which was inserted and kept in place by a lead peg and bushing from which the extruded anode was hung in the tank. This caused a poor connection and may have been responsible for the increased solubility of the elyptic anodes; a hole was in the bottom end of the extruded anode when received, so it was reversed with the result in special tests.

It should be stated that the rolled anodes were not the usual commercial kind, but strips of 99.92% pure copper, annealed in order to flatten.

This test was made in a hot copper solution in which the amount of free cyanide varied, and was used in plating several kinds of work.

The Secretary of St. Louis Branch has not received any returns from out of-town members on the broad hint, regarding papers to be presented at Indianapolis Convention, mentioned in the March number. Get Busy!

THE PLATER EXECUTIVE

By W. J. Allen,

Second Vice-President American Electro-Platers' Society.

Our own completely up-to-the-minute Monthly Review, containing contributions from all over this continent, and edited by an exceedingly able editorial staff; our trade papers, contemporary societies reports, as, for instance, the Electro-Chemical Society reports, and most of the miscellaneous writings with regard to our profession; deal with the chemical, electrical and other scientific questions, that may arise to puzzle the brain and absorb the time, of even the best and most experienced of our membership.

Occasionally we note an exception in the written word of our profession, some member will write of the mechanical, an exceptionally good example of which is in the December, 1920, number of the Review and was written by John Acheson of Toronto Branch.

We must all hope for much more from the writer of that particular paper as it hits, and hits hard, at some of the worst difficulties, with which the head of the Electro-plating Department is obliged to contend.

It sometimes would appear to the writer of this paper that the management of a factory will buy expensive machinery for any purely mechanical department without objection, but will hesitate, hold executive sessions, consultations, and conferences without number, over the purchase of a plating dynamo—which machine, even of large size and the highest grade, will cost less than a high grade lathe for the tool room; although the lathe cannot furnish a place of employment for more than one man, while the dynamo will furnish electric current that keeps several men, many thousands of gallons of solutions, and thousands of dollars worth of equipment busy.

However, it is not the purpose of this paper to call attention to matters of chemistry, electricity, or even the mechanical equipment, used in practice of the profession; but to very briefly write of another factor, that should be embodied in the man, that can successfully manage a large plating department.

While a man should have thorough knowledge, and long practical experience, in the actions and reactions of a solution, under the influence of an electric current, also a fairly good knowledge of the mechanical equipment of plating departments, yet, if the department is at all large, he must also be a good executive, in the meaning or definition of the word executive which will follow, and especially with regard to the special problems of our own profession.

Profession! "Why profession instead of trade?" may be asked by some hearers or readers of this paper. Most men that are not informed in regard to our problems in detail, think of the electroplater as a skilled mechanic or tradesman, rather than a professional man.

The writer does not hold the diploma of any educational institution; yet, a very small portion of the study and thought necessary to acquire one-half of his thirty years' experience at electro-plating and finishing, would have earned the "sheepskin" of any one of the recognized professions. It is not the fault of the electroplater that a special course carrying the Bachelor of Science degree at the finish, is not established at every prominent college. It is only because the demand for our special kind of training is not great enough at present. We miss and lack some of the purely academic of education, but we have to secure the education to an extent not approached by any trade, and not equaled by some of the recognized professions. Therefore, it is, and always will be—Profession—with a large and illuminated initial letter, in the mind of the writer and many others, who have knowledge of these facts.

The foregoing may not be necessary, in the opinion of some, as a preface to a few words on the subject of the plating room executive; but the purpose of the writer has been to call attention to the fact, that the deparment head must have a little, at least, of something more than is necessary in most other factory departments. However, the pursuit of knowledge by either academic or practical methods, in scientific lines, is liable to absorb too much of a man's mind, and therefore, it is the writer's opinion, that many of the best men technically and practically, in our profession, are almost without ability to organize a department or execute its business, along efficient or economical lines.

Electro-plating departments should not be an exception in the above respect, and, in the writer's opinion, the condition has improved very decidedly during the past few years, owing perhaps to the work done by the American Electro-Platers' Society.

The following, given in order of their importance, are the principal requirements of good factory department executives:

To handle workmen and women efficiently and economically.

To keep in close touch, and co-operate in every way, with the management.

To keep in touch with, and secure the confidence of the workers.

To have ability to organize, for rush orders, without disturbing regular organization.

To have interest, self-confidence, and professional pride.

Handling labor efficiently and economically, does not mean that we should endeavor to pay the lowest wage possible to our labor, but does require that each man should have his duties to perform, and should be paid according to the finished performance. A result, that in some cases, can be accomplished cheapest by the highest paid men. For it is an industrial fact that, in many cases, the highest paid "gang" do their work at the lowest net cost per unit of production.

Keeping in touch with, and real co-operation with the management is one of the most difficult items of the executive duties

of a department head; especially in some corporations, as, in some cases, the general management is so self-sufficient that they do not consult or rely on department heads, who are there, "to do what we tell them to do," as one office sub-head, or shall we say "saphead," expressed it.

Another point for the department executive to consider is also of prime importance. Every company has formed its own plan that is supposed to fit together, each department with the others, to make a perfect organization. Every opportunity to study that plan as a whole should be taken, and the department plan made to fit. The closer the department management keeps to the general factory plan, the less friction between departments, or the department and office. If the general plan is difficult, or offensive, for any reason, to the department head, his ability as an executive should be used to secure a reasonable working modification, or his connection with the concern should be severed. In the writer's opinion, both sides should be satisfied in order that co-operation can be complete.

However, many corporations are awake to the fact that the department head is really a factor, and, with such concerns, it is a pleasure to co-operate and become acquainted with the general policies, and to promote them for the good of the whole organization.

A department head should keep in personal touch with his employees—should know their hopes and, to a certain degree, should share their troubles. He should advise with regard to personal matters, when it is evident his experience is greater than theirs, and should not be averse to consulting with them on practical phases of the work, if they have had long or varied practical experience.

He should also give all technical and practical information possible in answer to questions on such matters. The only commandment is, "Keep the confidence and respect of your men and women."

Another important test of executive ability is in keeping the department flexible—not just one fixed time or man for one job, but in case of emergency to be able to make over the department to the extent that any reasonable increase of a particular line or pattern of goods can be produced without seriously interrupting the regular movement of goods through the department.

More men fail because of inflexibility than for any other cause; granted that it is sometimes difficult to come up to the demand or desire of the factory management, still, we should remember the best talking point our salesmen can use, next to price and quality, is deliveries—and sometimes deliveries are at the price of a lot of department trouble.

And, finally, no matter what our official title may be—Department Manager, Department Superintendent, or simply

Foreman—do not forget that we are an essential cog in the industrial machine. Forrest Chrissey calls us "Top Sergeants of Industry." That is very complimentary, to say the least; for it is a recognized fact in army circles that a General can be made from a West Point Graduate, but "You can't make a Top Sergeant—he has to be born that way."

Dare I apply this quotation to industry? Yes? Well, here goes, hit where it may: You can make a business department manager from a business college graduate, but a good factory foreman—HE has to be born that way.

We must maintain an honest pride in our profession, faith in our own selves, as we wish our officials and employees to have faith in us, and if we cannot be conscientious department heads or foremen for the concern with which we are connected, we should give a reasonable notice and make a change.

For, in the write's opinion, a man of subservient character has not enough self-respect to be, even in a small way, a successful foreman of an electro-plating or any other department. The only thing to do in a case like that is what an old factory superintendent said, "Buck up, or get out."

(Gold Plating—Continued from Page 13)

Work such as candlesticks, sanctuary lamps, etc., which are lacquered: the object here is generally to get the desired finish or color as quickly as possible, with the expenditure of as little gold as can be used. Usually when the desired shade is obtained, sufficient gold has been deposited.

This class of work is done as follows: First potash the work to remove old lacquer and grease. Bright dip and tripoli buff. Then wash in a mild cleaner to remove buff composition. Dry and color work to a high luster with hard rouge, avoiding any finger marks or stains. After buffing, clean for a minute or two in a mild cleaner. Rinse in water, cyanide dip, rinse, and then bring it to the gold solution, keeping the work agitated. And as soon as the desired color is obtained, remove the work from the solution, rinse in water jar. Dry either with a soft cloth or sawdust. Color buff with a cotton flannel buff and soft rouge if necessary, then lacquer it.

In gilding this class of work, if you use a voltage of from two and a half to three volts, and regulate your anode up or down, the desired color is gotten in from one to two minutes. When the solution begins to become off color, I make up a new one and add the old one to the solution in which I do the heavy gold plating.

The spirits of the "Hilarity Committee" should conform to the Volstead Act.

One question that must be settled at Indianapolis is: Where are we going from here? Be there to help settle that.

WHAT THE BRANCHES ARE DOING.

Boston.

Meets first and third Fridays of each month, 8 p. m., at the American House. Secretary, A. W. Garrett, 37 Dorset St., Dorchester, Mass.

Boston Branch met March 18, 1921, with President Mackie in the chair. The following officers were installed to fill out the term as permanent officers: President, Jere. J. Nihan; Vice-President, Louis A. Gale; Secretary-Treasurer, Andrew Talamona;; Recording Secretary, Andrew W. Garrett; Librarian, H. H. Whitcomb, and five Board of Managers; chairman, Thomas J. McShane; Francis Mackie, R. C. Barnstead, P. Nelson and S. Herrick; sergeant-at-arms, E. J. White. After the officers were installed, Past President Mackie gave another one of his lessons in chemistry. It was very interesting and those that attend would not miss any of the meetings now. Two applicants were elected to membership.

Boston Branch met Friday, April 1st and had a large attendance. President Nihan opened the meeting, and after the regular order of business, we had our fourth talk on chemistry by Past President Mackie. These talks are helpful to all. The next lesson, or talk, will be on the brass solution. There was a short discussion and the meeting adjourned at 10:45 p. m.

Chicago.

Meets second Saturday of each month, 8 p. m., at the Briggs House, Randolph and Wells Sts., Secretary, Frank J. Hanlon. 2855 N. Richmond St., Chicago, Ill.

At regular meeting held April 9, 1921, we had a fine attendance. Weather being blizzardly. We received one application and elected two applicants to active membership.

M. Huenerfauth, Chairman of Public Installation of Officers and Ladies' Night, reported that they had decided to start evening with installation then proceed to bunco and dancing, with high-class entertainers working during the interim, and stated that the announcements would go forward at an early date.

The communications from program, also the Educational Committees of Indianapolis Convention were read and the request for papers was turned over to O. E. Servis, Chairman of Chicago Educational Committee, who stated he would see that Chicago was represented by a half dozen good papers and would advise Indianapolis of same with subjects and authors.

The publicity request was turned over to a committee consisting of E. Lammoureaux, H. Gilbertson and O. E. Servis, who immediately organized "The Hilarity Committee" of Chicago Branch, with "On to the Convention at Indianapolis" for its slogan. They will circularize every employer of platers in Chi-

cargo, importuning them to send their plater, with expenses paid, to convention for the education it affords.

Chicago Branch, in view of condition of trade here, has decided on the minimum dues allowed by Supreme Society for ensuing year, which is $6.00.

Next meeting will determine who will guide the Ship of State in Chicago American Electro-Platers' Society next year.

R. J. Hazucha goes to Milwaukee Branch. Very sorry, but Milwaukee is a nice place and good bunch of fellows.

Cincinnati.

Meets on the first and third Friday of each month at 1262 State Ave. Secretary, W. J. Husing, 729 McMakin Ave., Cincinnati, O.

On the death of T. R. King of our branch, a committee presented the following resolutions:

Whereas, The Almighty has seen fit to take from our presence our esteemed friend and co worker, T. R. King; and

Whereas, We, as an organization and as individuals, feel his loss deeply; be it

Resolved, That we express our sympathy to the bereaved family, and that a copy of this resolution be sent to them, be spread upon the records of our branch and also published in the Monthly Review of the American Electro-Platers' Society.

THOS. WHITEHEAD,
C. M. KELLY,
C. BRADLEY,
Committee.

The members of Cincinnati Branch are taking considerable interest in our classes in chemistry and the attendance is good. We received two applications for membership at our last meeting.

Connecticut Valley.

Meets at Hartford, Conn. Secretary, Jas. A. Bagshaw, 39 Grand St., New Britain, Conn.

Connecticut Valley Branch.

A meeting of the Connecticut Valley Branch was held on April 11th, President Harry R. MacFadyen in the chair. Eighteen people present. One application received. Secretary read new temporary charter. Communication from Indianapolis Publicity Committee read. Committee appointed to answer communication. A very interesting talk was given by Mr. Amos Bissell of Bridgeport, Conn., on Japan-Varnishes and their Compositions. A rising vote of thanks was given Mr. Bissell for his address. Mr. Geo. A. Hogaboon also gave a short address that was very instructive to all platers. Connecticut Valley Branch has hard work getting a suitable place to meet, as the manu-

facturers of Hartford County are all anxious to have us meet at their plant, so that the President and Secretary were voted to select the most suitable place for our next meeting.

Mr. E. M. Miller was elected to fill a vacancy as Librarian.

Indianapolis.

Indianapolis Branch holds its business meeting the second Saturday in each month at Hotel Denison. Secretary, Louis Mertz, 1725 Union St., Indianapolis, Ind.

The branch held its regular meeting April 9th, with President Hennessey presiding over a good attendance.

It was decided that we increase our dues to $6.00 per year June 1, 1921. One application was received, one member was reinstated and one member was suspended. After Convention Committees reported the subject of having the assistance of the ladies on convention work was brought up, it was decided to hold a meeting Friday, April 15th, and invite them to be present.

Milwaukee.

Meets first Friday of each month at West Side Bank Building. Secretary, A. W. Ruttan, 1105 Twenty-eighth St., Milwaukee, Wis.

The Milwaukee Branch's second banquet at Maryland Hotel, March 19, 1921, will go on record as a very successful affair, the number attending being sixty-six. The character of the papers and addresses were such that everybody was pleased, and said it was a great success. The success of carrying out the program is a credit to the Toastmaster, Jos. Birbaum, who took the place of Mr. Fred G. Hunt on very short notice. We had many out-of-town visitors; the Chicago delegation came on a special car. We were very sorry the Chicago boys did not stay till the finish, but they had to leave at 11 o'clock to make train connections, etc.

Program as follows: Toastmaster, Jos. Birbaum; "Our Society, L. H. E. Armour, President Milwaukee Branch; Address, H. E. Willmore; Paper, "Chemical Control, Its Application and Value," Roy W. Armour; Address, Taylor Frye; Paper, "Nickel Solutions," R. J. Hazucha; Address, P. J. Sheehan. Music by Cream City Quartette.

Yours truly,

THE COMMITTEE.

(Editor's Note—The papers will appear in Monthly Review very soon.)

Dayton.

Meets first Saturday of each month at the Y. M. C. A, Dayton, Ohio. Secretary, Alphonz Lamoureux, 432 E. Second St.

Providence-Attleboro.

Meets first and third Thursdays of each month at 26 Custom House Street, Room 16. Secretary, Clayton J. Poyton, 269 Ohio Avenue, Providence, R. I.

New York.

Meets every second and fourth Fridays of each month at the Broadway Central Hotel Parlors, New York, N. Y. Secretary, John Burke, 110 Glen St., Brooklyn, N. Y.

President Sterling presided at the March meetings of New York Branch. A membership investigation committee was appointed by the President to investigate qualifications of new applicants. The following problems were discussed.

The production of a black deposit on steel with ammonium nitrate; best method for burnishing small nickel-plated parts; the composition of a black dip for lead antimony.

Philadelphia

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Sts. Secretary, Philip Uhl, 2432 North 29th St., Philadelphia.

The regular meeting of Philadelphia Branch was held April 4th, President D. A. Metz presiding. One application for associate membership was received; one active was elected, and one reinstated. Nominations for officers was made.

The subject of discussion was the use of cadium in a zinc sulphate solution.

The publishers of the Metal Industry were given a vote of thanks for the bound volume, 1920 issue, which they presented to the branch.

Rochester.

Meets on the fourth Fridays. Secretary, Sylvester Gartland, 128 Bryan Street, Rochester, N. Y.

The eighth annual banquet, held at Hotel Seneca on March 19th, was a grand success. It made a speed record from a flying start to a whirlwind finish. First, we had to shell out, we were then decorated and then filled with a menu of splendid eats with suspicious names, after which Wm. Schneider tried to make us sing. Messrs. Flannigan, Haddow and Mesle were introduced in turn by Mr. Lopez, who was a real toastmaster. Mr. Gartland being our Supreme President, was the next victim and, being in his home town, had to say nice things about everything and everybody. Well, when telling the truth, he couldn't do otherwise. The Ladies' Auxiliary and Banquet Committee were highly complimented.

Believing in asserting their rights, Mrs. Fitch, Jr., and Mrs. Hesselink represented the Auxiliary in a flow of oratory that made the men jealous.

The program that followed consisted of instrumental and vocal solos, recitations and even dreams and prophecies.

After this, dancing kept the crowd going to the finish. The Banquet Committee consisted of Messrs. Geo. Hesselink, E. E. Fitch, Jr., and Bert Groh.

St. Louis.

Meets first Saturday of each month at Barr Branch Library, corner Jefferson and Lafayette. Secretary, H. H. Williams, 4156 Botanical Ave., St. Louis, Mo.

In the absence of both our President and Vice-President at our meeting on April 2nd, our stand-by, G. Lamkemeyer, presided. One application for membership was presented and referred to Board of Managers. Communications on convention matters were turned over to "Booster Committee."

E. J. Musick presented a paper on "Commercial Silver Plating of Large Copper Tanks." This was read by J. H. Hartman, as Ed was becoming a "Star" at another meeting.

A paper on "Gold Plating" was read by E. W. Mueller, who also had exhibits which were admired for the fine quality of workmanship. While a comparative small amount of this class of work is done in our city, the discussion on both papers was lengthy.

While it may be considered a matter of ancient history, a short paper on "Close Plating" was read by Chas. Fischer, who has done a great deal of it.

Toronto.

Meets second Thursday of each month at Occident Hall, Bathhurst and Queen Streets. Secretary, Chas. Kemish, 271 Boston Avenue, Toronto, Ont.

Toledo.

Toledo Branch meets 1st Thursday night each month at Toledo University Science Building, Electro-Platers' Room, corner Cherry and Page Sts. H. L. Myers, 410 Palmer St., Secretary.

Detroit.

Meets first Friday in each month at Cass Technical High School, Platers' Classroom, 2nd Avenue and Beech Street, at 8 p. m. Secretary, E. G. Lovering, 3719 Grand River Avenue, Detroit, Mich.

Grand Rapids.

Meets on the second Wednesday of each month at the Vocational High School, 129 Bostwick Avenue. Secretary, J. B. Hawley, 1317 Jefferson Ave., Grand Rapids, Mich.

Pittsburgh.

Meets every first Saturday at 8 p. m. at United States Bureau of Mines Building, Forbes St. Secretary S. E. Hedden, 227 5th St., Aspinwall, Pa.

Newark.

Meets first, third and fifth Fridays of each month, 8 p. m., Foresters' Home, 20 Central Ave., Newark, N. J. Secretary, O. F. Carlson, 225 West Grand St., Rahway, N. J.

Bridgeport.

Meets third Friday of each month in its laboratory, 260 John St., Bridgeport, Conn. Secretary, Louis J. Maraffi, 744 Hancock Ave., Bridgeport, Conn.

Cleveland.

The Cleveland Branch meets every second and last Saturday of the month at 1344 East Prospect St. Secretary B. F. McCormick, 1941 West 77th St.

APPLICATIONS FOR MEMBERSHIP

Chicago

Fred J. Bedord (associate)...3137 W. Flournoy St., Chicago, Ill.

Cincinnati

Frederic J. Brunner.....1262 State Ave., Cincinnati, O.
John Bruns.....1329 Main St., Cincinnati, O.

Indianapolis

J. F. Vehling.....4217 College Ave., Indianapolis, Ind.

Philadelphia

Wm. H. Schweizer (associate).1012 Spruce St., Philadelphia, Pa.

St. Louis

Geo. Powitzky (active).....4557 Clarence Ave., St. Louis, Mo.